

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions or listings of claims for this application.

#### **Listing of Claims:**

Claims 1-30 (Canceled).

31. (Currently amended) A ~~non-volatile~~ resistance variable device comprising:

a substrate having a first electrode formed thereover;

a resistance variable chalcogenide comprising material having metal ions diffused therein received operatively adjacent the first electrode, the chalcogenide material comprising  $A_xB_y$ , where “B” is selected from the group consisting of S, Se and Te and mixtures thereof, and where “A” comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

a second electrode received operatively adjacent the resistance variable chalcogenide comprising material; and

the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface region having a higher content of “A” than the first region, and no metal chalcogenide agglomerations at the interface.

32. (Original) The device of claim 31 wherein “A” comprises Ge or Si.

33. (Original) The device of claim 31 wherein “A” comprises Ge.

34. (Original) The device of claim 31 wherein “A” comprises Ge, and “B” comprises Se.

35. (Original) The device of claim 31 wherein “A” comprises Ge, “B” comprises Se, and the metal ions comprise Ag.

36. (Previously presented) The device of claim 31 wherein the interface region has a thickness of less than or equal to 100 Angstroms.

37. (Original) The device of claim 31 wherein the interface region has a thickness of greater than or equal to 10 Angstroms.

38. (Original) The device of claim 31 wherein the interface region has a thickness of less than or equal to 100 Angstroms and greater than or equal to 10 Angstroms.

39. (Original) The device of claim 31 wherein the interface region is substantially homogenous.

40. (Original) The device of claim 31 wherein the interface and first regions have substantially the same concentration of the metal.

41. (Original) The device of claim 31 wherein the interface region is substantially homogenous, and the interface and first regions have substantially the same concentration of the metal.

42. (Original) The device of claim 31 wherein the second electrode material predominately comprises elemental silver.

43. (Currently amended) ~~The device of claim 35-A resistance variable device comprising:~~

a substrate having a first electrode formed thereover;

a resistance variable chalcogenide comprising material having silver ions diffused therein received operatively adjacent the first electrode, the chalcogenide material comprising Ge<sub>x</sub>Se<sub>y</sub>, wherein the atomic percent of silver within the resistance variable chalcogenide comprising material is approximately 20 percent or less;

a second electrode received operatively adjacent the resistance variable chalcogenide comprising material; and

the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface region having a higher content of Ge than the first region, and no silver chalcogenide agglomerations at the interface.

44. (Currently amended) ~~The device of claim 35-~~ A resistance variable device comprising:

a substrate having a first electrode formed thereover;

a resistance variable chalcogenide comprising material having silver ions diffused therein received operatively adjacent the first electrode, the chalcogenide material comprising Ge<sub>x</sub>Se<sub>y</sub>, wherein the resistance variable chalcogenide comprising material is not saturated with silver ions;

a second electrode received operatively adjacent the resistance variable chalcogenide comprising material; and

the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced from the interface at least by a chalcogenide material interface

Application No.: 10/736,617  
Amendment dated August 24, 2005  
Reply to Office action dated June 23, 2005

Docket No.: M4065.0698/P698-A

region having a higher content of Ge than the first region, and no silver chalcogenide agglomerations at the interface.